

### **Amendments to the Claims**

This listing of claims will replace the originally filed claims in the application.

#### **Listing of Claims:**

Claims 1 – 9 (cancelled).

Claim 10 (currently amended): A method which may be used for supplying occupants of an aircraft with an oxygen rich gas mixture, said method comprising producing an oxygen-rich gas mixture by air separation in a pressure swing adsorption system, wherein:

- a) one cycle of said pressure swing adsorption system comprises:
  - 1) an adsorption / production phase;
  - 2) a desorption / regeneration phase; and
  - 3) a duration less than about 10 seconds;
- b) said pressure swing adsorption system comprises a high-performance adsorbent, wherein said adsorbent has a particle size less than about 0.8 mm; and
- c) feed air is introduced to said pressure swing adsorption system at an inlet temperature between about 50°C and about 90°C, wherein the feed air is obtained from a stream of hot air from a compressor stage of an aircraft engine which is subsequently cooled in a heat exchanger.

Claim 11 (previously presented): The method of claim 10, wherein said inlet temperature is between about 60°C and 80°C.

Claim 12 (previously presented): The method of claim 11, wherein said inlet temperature is between about 60°C and about 70°C.

Claim 13 (previously presented): The method of claim 10, wherein the average size of said particles is less than about 0.6 mm.

Claim 14 (previously presented): The method of claim 10, wherein said duration is between about 6 seconds and about 9 seconds.

Claim 15 (previously presented): The method of claim 10, wherein said feed air is introduced to said pressure swing adsorption system with a pressure less than about 5 bar.

Claim 16 (previously presented): The method of claim 15, wherein said feed air is introduced to said pressure swing adsorption system at a flow rate between about 300 NI/min and about 3600 NI/min.

Claim 17 (previously presented): The method of claim 10, wherein said adsorbent comprises zeolite X with a lithium content greater than about 85%.

Claim 18 (previously presented): The method of claim 17, wherein said adsorbent comprises zeolite X with a lithium content greater than about 90%.

Claim 19 (previously presented): The method of claim 17, wherein said zeolite has an Si/Al ratio between about 1 and about 1.25.

Claim 20 (currently amended): A method which may be used for supplying occupants of an aircraft with an oxygen rich gas mixture, said method comprising producing an oxygen-rich gas mixture by air separation in a pressure swing adsorption system, wherein:

- a) one cycle of said pressure swing adsorption system comprises:
  - 1) an adsorption / production phase;
  - 2) a desorption / regeneration phase; and
  - 3) a duration between about 6 seconds and about 9 seconds;
- b) said pressure swing adsorption system comprises a high-performance adsorbent, wherein said adsorbent has an average particle size less than about 0.6 mm; and
- c) feed air is introduced to said pressure swing adsorption system at an inlet temperature between about 60°C and about 80°C, wherein the feed air is obtained from a stream of hot air from a compressor stage of an aircraft engine which is subsequently cooled in a heat exchanger.

Claim 21 (currently amended): A method which may be used for supplying occupants of an aircraft with an oxygen rich gas mixture, said method comprising producing an oxygen-rich gas mixture by air separation in a pressure swing adsorption system, wherein:

- a) one cycle of said pressure swing adsorption system comprises:
  - 1) an adsorption / production phase;
  - 2) a desorption / regeneration phase; and
  - 3) a duration between about 6 seconds and about 9 seconds;
- b) said pressure swing adsorption system comprises a high-performance adsorbent, wherein:
  - 1) said adsorbent has a particle size less than about 0.8 mm;
  - 2) said adsorbent comprises zeolite X with a lithium content greater than about 90%; and
  - 3) said zeolite has a Si/Al ratio between about 1 and about 1.25; and
- c) feed air is introduced to said pressure swing adsorption system, wherein said feed air:
  - 1) has an inlet temperature between about 60°C and about 70°C;
  - 2) has an inlet pressure less than about 5 bar; and
  - 3) has an inlet flow rate between about 300 NI/min and about 3600 NI/min; and
  - 4) is obtained from a stream of hot air from a compressor stage of an aircraft engine which is subsequently cooled in a heat exchanger.